

Trncvr1-----Com Link----->>Trncvr2
2.325 GHz 3.025 GHz

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Independent claim 1 recites, among other features, means for information transmission/reception, said information transmission/reception means providing for information transmission using a first polarization and for information reception using a second polarization to thereby isolate information transmission from information reception in full duplex communication, wherein said means for information transmission/reception provides for information transmission and information reception using a common frequency.

In numbered paragraph 2 on page 4 of the Office Action, claims 1, 2, 11, 12, 19, 25, 26, 29, 36, 37, 40, 76-83, 86-88, 90-94, and 97-102 stand rejected under 35 U.S.C. §103(a) as alleged being unpatentable over *Dent* (U.S. Patent No. 5,619,503)

in view of *Kumar* (U.S. Patent No. 5,793,253) and further in view of *Fenter* (U.S. Patent No. 4,459,651). Applicants respectfully traverse this rejection.

In the paragraph bridging pages 12 and 13 of the Office Action, the Examiner acknowledges that the previous rejection of the claims is maintained because of the belief that independent claims 1, 19, and 29 were amended to include new matter. In the preceding remarks, Applicants' have established that the amended subject matter is in fact supported by the original disclosure. Because the cited art fails to disclose or suggest the combination of features recited in Applicants' claims, a *prima facie* case of obviousness has not been established. Detailed arguments in support of this position are provided below.

In Figures 1-6, Applicants' describe exemplary embodiments of a transmitter 100 that includes means for modulating and demodulating information signals. The modulating means includes a data input means, a data processing means 104, and a power output means 106. The power output means 106 supplies a signal to a first 90° hybrid 134, such as a branchline coupler. Outputs from the hybrid 134 are supplied to amplifiers 140 and 142, which output amplified signals to second and third 90° hybrids 144 and 146. Hybrids 144 and 146, for example, are arranged in tandem to permit the use of a plurality of separate, parallel stages, or channels, of amplification (e.g., page 8, lines 7 and 8; Fig. 1). Further hybrids, amplifiers, and channels are used to generate a radio frequency output 108. The antenna can be configured to establish a communication link where at one end an intermediate frequency into the transmitter is 2.325 GHz and the receiver output 3.025 GHz. At another end of the link, the transmitter uses an intermediate frequency of 3.025 GHz

and the receiver is 2.325 GHz. As a result, forward and reverse wireless information transfer channels are established to be isolated from each other.

Applicants' claims broadly encompass the foregoing features. Namely, independent claim 1 recites, among other features, means for information transmission/reception, said information transmission/reception means providing for information transmission using a first polarization and for information reception using a second polarization to thereby isolate information transmission from information reception in full duplex communication, wherein said means for information transmission/reception provides for information transmission and information reception using a common frequency; independent claim 19 recites, in part, isolating transmission/reception of information by transmitting information with a first polarization and by receiving information with a second polarization in full duplex communication, wherein said information transmission and said information reception are performed over a common frequency; and independent claim 29 recites, *inter alia*, a dual polarization antenna for transmitting said information with a first polarization, and for receiving information with a second polarization opposite to said first polarization in full duplex communication, wherein said information is transmitted and received over a common frequency.

The combination of *Dent*, *Kumar*, and *Fenter* fail to disclose or suggest every feature recited in Applicant's claims.

Dent discloses a system in which a downlink transmission frequency is different from an uplink frequency. Particularly, *Dent* states that when transmitting information from a satellite to a hub station the satellite uses L-band antenna elements. When sending information from the hub station to the satellite, the hub

station uses a set of K-band frequencies that are different from those used in the satellite-to-hub direction. See Dent, col. 12, line 44 - col. 13, line 6.

The Examiner acknowledges that *Dent* fails to disclose or suggest regulating power or the use of 90-degree hybrids, and relies on the disclosures of *Kumar* and *Fenter* in an effort to remedy these deficiencies. While not acquiescing to the alleged teachings of these secondary references, Applicants do submit that neither *Kumar* nor *Fenter* discloses the use of a common transmit and receive frequency as recited in Applicants' claims. For example, *Kumar* is directed to a power transmitter and does not contemplate a receiver as recited in Applicants' claims. *Fenter* discloses a switching regulator power supply that operates at a variable high frequency and pulse width with low power dissipation. This reference fails to disclose or suggest any features relative to the common transmit and receive frequencies as recited in the context of Applicants' claimed embodiment.

In summary, *Dent*, *Kumar*, and *Fenter* when applied individually or collectively as suggested by the Examiner, fail to disclose or suggest every feature and/or the combination of features recited in Applicants' claims. As a result, the combination of references fails to establish a *prima facie* case of obviousness with respect to independent claims 1, 19, and 29 and their corresponding depending claims. Withdrawal of this rejection, therefore, is requested.

In numbered paragraph 3 on page 12 of the Office Action, claim 89 is rejected under 35 U.S.C. §103(a) for allegedly being unpatentable over *Dent* in view of *Kumar* and *Fenter* and further in view of *Bhame et al.* (U.S. Patent No. 5,911, 117). Applicants respectfully traverse this rejection.

Because claim 89 depends from claim 1, Applicants respectfully submit that this claim is allowable for at least the reasons discussed above with respect to claim 1. Furthermore, this claim is deemed further distinguishable over the applied references based on the additional features recited therein. For at least these reasons, withdrawal of this rejection is respectfully requested.

Conclusion

Based on the foregoing amendments and remarks, claims 1, 2, 11, 12, 19, 25, 26, 29, 36, 37, 40, 76-83, 86-94, and 97-102 are deemed allowable and this application is believed to be in condition for allowance. In the event any issues adverse to allowance remain, the Examiner is invited to contact the undersigned in an effort to advance prosecution.

Respectfully submitted,

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